

Boole's Coupe:

Enter the following equations into your graphing calculator. Use the following window: [0, 9.4, 1, 0, 6.2, 1]

|    | Picture Part         | Algebraic Equation            | Restriction           | Calculator Instructions (equation and domain)                     |
|----|----------------------|-------------------------------|-----------------------|---|
| 1. | Bottom of coupe      | $y = 1$                       | $1 \leq x \leq 9$     | $y_1 = 1 / (x \geq 1 \text{ and } x \leq 9)$                      |
| 2. | Back of coupe        | $y = 1.2\sqrt{x-1} + 1$       | $x \leq 3.5$          | $y_2 = (1.2\sqrt{(x-1)} + 1) / (x \leq 3.5)$                      |
| 3. | Front of coupe       | $y = 1.2\sqrt{-(x-9)} + 1$    | $x \geq 6.5$          | $y_3 = (1.2\sqrt{-(x-9)} + 1) / (x \geq 6.5)$                     |
| 4. | Top of coupe         | $y = -.5(x-5)^2 + 4$          | $3.5 \leq x \leq 6.5$ | $y_4 = (-.5(x-5)^2 + 4) / (x \geq 3.5 \text{ and } x \leq 6.5)$   |
| 5. | Rear wheel of coupe  | $y = -\sqrt{1-(x-2.5)^2} + 1$ | <i>none</i>           | $y_5 = -\sqrt{1-(x-2.5)^2} + 1$                                   |
| 6. | Front wheel of coupe | $y = -\sqrt{1-(x-7.5)^2} + 1$ | <i>none</i>           | $y_6 = -\sqrt{1-(x-7.5)^2} + 1$                                   |
| 7. | Door handle          | $y =  x-5.5  + 2$             | $5.2 \leq x \leq 5.8$ | $y_7 = (abs(x-5.5) + 2) / (x \geq 5.2 \text{ and } x \leq 5.8)$   |
| 8. | Center edge of coupe | $y = .15(x-5)^2 + 2.6$        | $3.5 \leq x \leq 6.5$ | $y_8 = (.15(x-5)^2 + 2.6) / (x \geq 3.5 \text{ and } x \leq 6.5)$ |

Graphs used:

- Line
- Parabola
- Square Root
- Absolute Value
- Circle

Parent Function:

$$y = mx + b$$

$$y = x^2$$

$$y = \sqrt{x}$$

$$y = |x|$$

$$y = \pm \sqrt{1-x^2}$$

Project: Boolean Graphs

Name: \_\_\_\_\_

Period: \_\_\_\_\_

- 1) Using graph paper and your calculator, draw a picture containing graphs of lines, parabolas, absolute values, square roots, and circles. The picture must contain between 5 to 10 different equations (10 is all your calculator will store). You must have one of each different function in your picture.
- 2) Record your equations in the table below.
- 3) Determine a domain to restrict each equation. This will stop the equation from continuing throughout your whole picture. Write your domain in the restriction column. Record your equation with this restriction in the denominator, just as it must appear in your calculator. Include all necessary parentheses.
- 4) Determine a good viewing window.

| Title of graph: _____ Viewing Window: _____ |              |          |             |   |
|---|--------------|----------|-------------|---|
|   | Picture Part | Equation | Restriction | Enter into calculator (equation and domain) |
| 1   |              |          |             |   |
| 2   |              |          |             |   |
| 3   |              |          |             |   |
| 4   |              |          |             |   |
| 5   |              |          |             |   |
| 6   |              |          |             |   |
| 7   |              |          |             |   |
| 8   |              |          |             |   |
| 9   |              |          |             |   |
| 10  |              |          |             |   |